Das Programm
MONDRIAN
von Herbert W. Franke

A milestone in interactive computerart in the 70´s
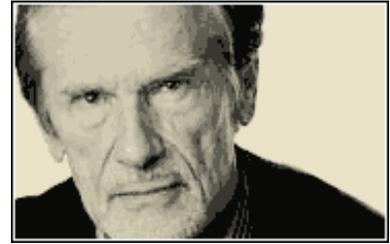
1981

TEXAS INSTRUMENTS
HOME COMPUTER

READY-PRESS ANY KEY TO BEGIN

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2006

Microsoft
Windows xp
Professional

MONDRIAN21.COM

MONDRIAN 21 - a project to revitalise H.W. Franke´s MONDRIAN introduced by Reiner Schneeberger

Platform for MONDRIAN in 1979 a Texas Instruments TI 99/4

2006 – Platform Microsoft Windows XP
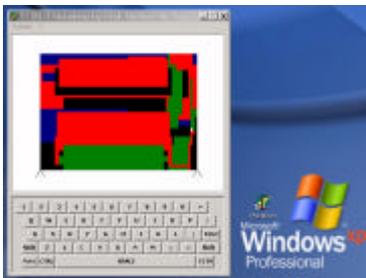
Introduction

In celebration of the 80th birthday of Prof. Herbert W. Franke, the German Computer Graphics and Art Society has reinvented the program MONDRIAN, which was designed at the end of the 70´s by H.W. Franke on a home computer, Texas Instruments model TI 99/4. Strong attention was given to reinventing the historic look and feel of the original MONDRIAN program. Now MONDRIAN 21 is available for download via the internet and it works with Windows 2000 and XP. It offers for teachers and students of information technology, as well as for students of art education, a wide area of active debate with the computer art of H.W. Franke – *and this, in a style from 25 years ago, a 70´s computer – yes! that means more than 5 years before the first PC came on the market.*

But even for people who want to get in touch with creative work on computers in a more relaxed way MONDRIAN 21 offers it.

By the enhancement of MONDRIAN 21 with the function "Vernissage" (Exhibition) sequences could be designed, tested and then brought to an audience. MONDRIAN 21 shows ways of connecting to "programmed art" and also brings a new element to the didactic of computer art. MONDRIAN 21 makes the art of H.W. Franke accessible as a living composition on small and large video screens. Basic settings of the historic version could be modified by external parameters, providing a large variety of ways in which to generate virtual worlds in the terms of "flatart" of the 21st century.

In this brochure we will describe the functions of the historical 1979 program and give instructions on how to use the function "vernissage" in MONDRIAN 21.

The 70s

At the end of the 70s the first home computers came on the market. By connecting to the TV, people could play and work with this new technical gadget in a wide spectrum. After typewriters could be connected to home computers, users could write letters and make printouts. Indeed the main use was "playing and having fun". The connection to the game console, like the legendary ATARI 2600 (1977) was obvious. A special device for input and control, called a joystick, allowed direct interaction. Via two ports or via a split (Y)-connector two players could interact by using their joysticks to enter into a competition for points and hits. Built in 2004 for the 20th birthday of the console ATARI 7800 the ATARI FLASBACK still offers in an inexpensive way a chance to beam back to the time of play and fun.

ATARI FLASHBACK with joysticks

The home computer offered for a whole generation of techies the first steps into programming. At the end of this era there were nearly uncountable dialects of the BASIC programming language on the market. Every manufacturer wanted to enhance his home computer model for a wide group of customers by developing a new BASIC version. With BASIC even youngsters could enter into the world of programming through trial and error. An advantage for programming creative visuals was, that from the beginning, there were functions in BASIC available for drawing rectangles, circles, ellipses and for filling these forms with colour.

The most well known home computers of the first generation are the Apple II (1977) and the Commodore C64 (1982). The Texas Instruments TI 99/4 was introduced to the public in June 1979. Based on its advanced 16 bit processor, the TMS 9900, and the integrated co-processor, the TMS-9918, designed for picture processing, the TI 99/4 found a foothold among insiders. Texas Instruments made the decision to use cartridges, or solid state modules, to distribute programs for the system.

Texas Instruments Germany contracted Prof. Franke to develop a cartridge for creative applications. The result was the module "Computergrafik" which came on the market in 1980. It offered a selection of three programs. Along with MONDRIAN, there were MOSAIQUE using constructive design rules for creating art and IMPRESSION which allowed visualisations of transformations based on matrix operations.
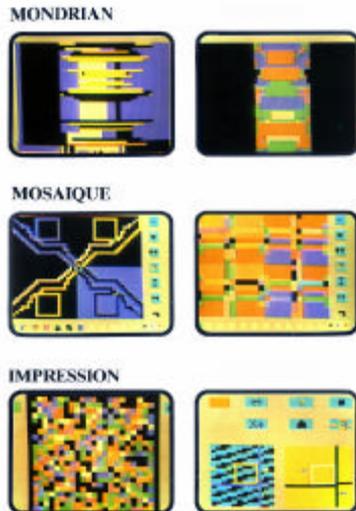
Even today many of the modules made only for the TI 99/4 are a source of fascination. In spite of the 2 million sales, the TI 99/4 was not a commercial success for Texas Instruments. In comparison to competitors the production costs were too high. By the summer of 1983 manufacturing of the TI 99/4 had already been discontinued.

More information about the TI 99/4 and the more or less identical model, TI 99/4A, can be found at wikipedia and at www.99er.net.

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TI 99/4 welcome screen

Cartridge

Historical pressure key table for control of MONDRIAN.

The original document of 1979 is available for download.

The program MONDRIAN on the TI 99/4

The TI 99/4 has to be connected via a cable to the antenna port of a home-TV. After the power was switched on the welcome screen appeared.

You had to insert the cartridge "computer art" to use the software of H.W. Franke. Then the computer was ready to accept commands via the keyboard.

Hauptwahlliste: Computergrafik

After choosing the appropriate selection – number 1 for MONDRIAN – you would find yourself in the middle of the world of art, invented by H.W. Franke for the TI 99/4. The computer instantly changed to a creator. Men was his audience. Controlled by a random process, MONDRIAN infinitely generates new structures and pictures – until the viewer wants to change some parameters and thereby to start a new experience and become an artist himself.
A few keystrokes and the colours changed.

FARBEN (in allen Programmen)

Taste	Symbol	Bemerkung
7		HELLROT
8		MITTELROT
9		DUNKELROT
0		MAGENTAROT
U		HELLBLAU
I		KORNBLUMENBLAU
O		DUNKELBLAU
P		HELLGELB
H		HELLGRÜN
J		MITTELGRÜN
K		DUNKELGRÜN
L		DUNKELGELB
N		SCHWARZ
M		WEISS
>	•	GRAU

Other keys, like "W" for music on/off or "6" for start and stop, were assigned in a similar way.

A few keystrokes and the size and alignment or colours compostion were rearranged. A genesis between fortuitousness, composition and improvisation.

Everybody could feel like an artist within minutes and act out his creative conceivabilities in a dialogue with the computer *and this more than 25 years ago!* The lecture "Cybernetic Aesthetics" which H.W. Franke gave at the University of Munich, Department for Visual Arts Education beginning in the mid 70´s received a lot of new aspects and practical experiences. It was proofed, that computer art can be experienced by everybody. MONDRIAN was programmed on the TI 99/4 based on a flowchart of H.W. Franke and is called one of the first tools for interactive computer art.
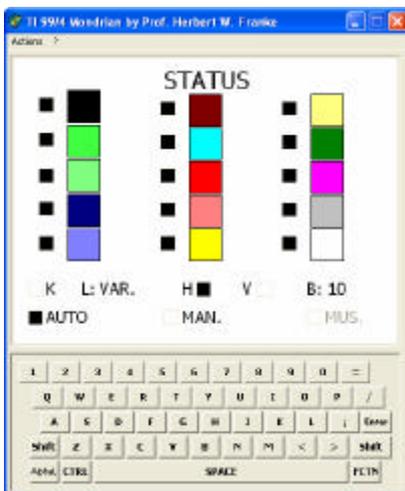
Start menu of MONDRIAN21

MONDRIAN 21

MONDRIAN 21, based on the historical version, beams the user back to the year 1979. After launching the program by clicking the MONDRIAN 21 icon or via the Microsoft Windows start menu the welcome screen "STATUS" of MONDRIAN 21 appears.

There are two ways of using the program: via the PC keyboard by keystrokes or via the mouse by clicking on the visualised historical keyboard of the TI 99/4. It´s worth having a look at the historical colourtable and the control sheets of H.W. Franke. We can see: Select and de-select the colour "Black" (Schwarz) by pressing the digit "N" and the colour "Red" (Mittelrot) by pressing "8" and so on - please have a look on page 4. The art generation starts after pressing "6". It is very simple: we use the keyboard like a piano in the way H.W. Franke has defined it in 1979. The MONDRIAN experiment could take place again 25 years later.

MONDRIAN 21 offers in addition to cklick on the visualised keyboard by using a mouse device to click on the small coloured squares. Via "mouse over" funtionality you will see the related codes. This is helpful if you plan to build your own "Vernissage". A vernissage is a simulation via a predefined composition. The composition is a set of codes in the way H.W. Franke has defined them. During the simulation colour codes and other coded sets could be changed in this way.

MONDRIAN VERNISSAGE
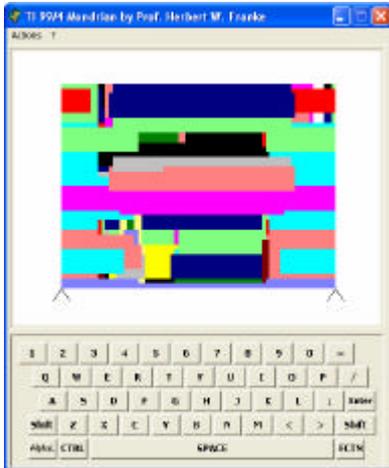
You can think in many ways about "what is a vernissage and how could we understand it working". Let´s imagine, a robot is siting in front of a MONDRIAN keyboard and is playing the score of an artist. The audience will see the visualisation on a PC-screen or via data-projection on a silver screen. Depending on the range of defined random effects, the result would be more or less predictable. Therefore the artist has designated a excertion of influence in the performance. Clapping, catcalls or beacons of the audience induce the robot to run additional code - in MONDRIAN by pressing the corresponding key. This modifies the continuation of the running compositon. Well, there is no robot to press keys, instead there is the file "vernissage.txt" containing the code sequences defined by the artist. MONDRIAN 21 is working on them. Simulaniously MONDRIAN 21 is polling the keyboard. This allows modification of the defined compostion during the performance. This represents the idea of H.W. Franke of an auto-genesis of art which was taken up in the following decades in computer minimal art and the devolopment of art producing systems. The computer generates and the viewer selects. This can be done by adding colours or de-selecting colours or by limiting areas in which the visual art performance continues. To increase the usabilty in the area of "event-art", MONDRIAN 21 has the ability for event-driven loops. Keywords marked by "/" empowered MONDRIAN 21 to develop dramaturgical enhanced art in a way of H.W. Franke mentioned in his early publications. Artists are invited to use MONDRIAN 21 in a wide range; copyright indication of the work of H.W. Franke is of course necessary.

The use of MONDRIAN 21 is, the same as other non-commercial art projects; use at your own risk. You have to agree to this limitation before downloading.

Download of MONDRIAN21

This is the link to download the program MONDRIAN21:

www.mondrian21.com/download

Installation of MONDRIAN 21

The install sequence is documented in the download section.

After download of MONDRIAN 21 the program could be installed on Windows 2000 / XP via a setup routine.

Click the file Mondrian.exe (423 KByte). The procedure is self-explanatory.

Using MONDRIAN 21

MONDRIAN 21 can be used in three ways:
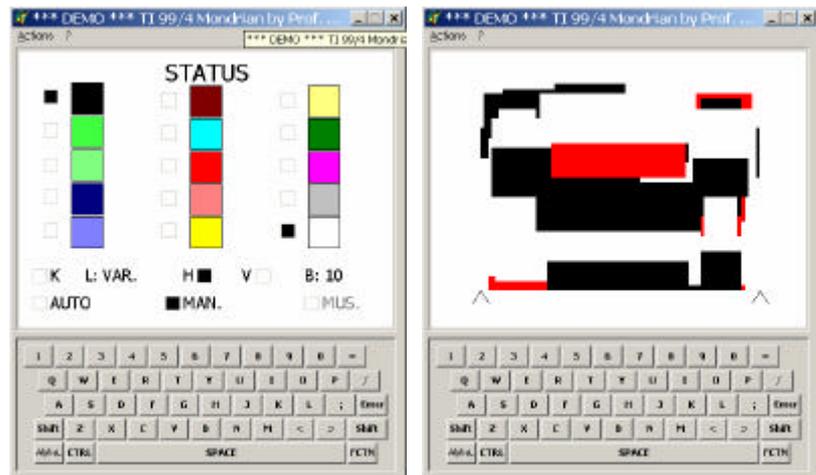
1. classic-style of 1981 via keybord:

Example:
Selection of colours: red, black, white via select and de-select:
7 9 0 U I O P H J K L > (resulting 8 N M)
2 (change to manual mode)
6 start of visualisation (end with B)

In addition to keystrokes also mouse-clicks are possible. This make it easy, expecially for beginners, to use MONDRIAN 21. Please note: the function "music / sound" is not available. To switch to full-screen mode - and back - use funktion-key F11.

The colour grey is available via **>** as well via **.** (dot). This corresponds to the historical keyboard of the TI 99/4.

2. Control via batch-procedure (Vernissage)

```
/comment(reset to system defaults )
B B
/comment(change to manual mode )
2
/comment(deactivate all colours)
7 8 9 0 U I O P H J K L N M .
/comment(start simulation)
6
/comment(start of loop; define label
"anfang")
/label(anfang)
/comment(in fullscreen F11: print
text "using colours P L" )
/print(using colours P L )
/comment(select colours "P" and "L")
p l
/comment(wait 5 seconds; simulation
continues )
/wait(5)
/comment(de-select colours P and L)
p l
/comment(text in colour red)
/print(shades of red, 0000FF)
7 8 9 0
/wait(5)
7 8 9 0
/comment(text in green )
/print(shades of green, 00FF00)
h j k
/wait(5)
h j k
/comment(text in blue )
/print(shades of blue, FF0000)
u i o
/wait(5)
u i o
/comment(end of loop; goto label
"anfang")
/goto(anfang)
```

example: vernissage.txt
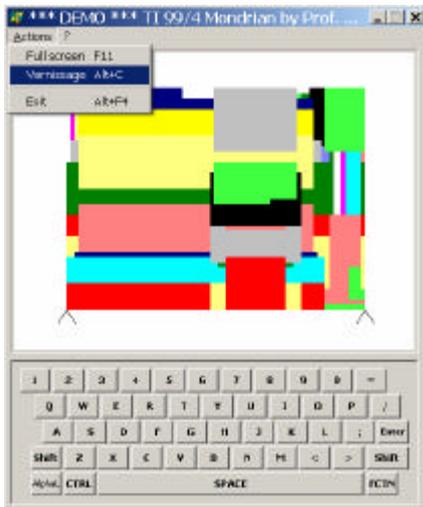
how to select "vernissage"

You will find the file vernissage.txt in the program library of MONDRIAN 21. Modify the code given as an example to give you an idea of how to build a vernissage by your own.

These commands are available:

Comment:
/comment()

Label:
/label() - example: /label(markb)

Jump to:
/goto() - example: /goto(markb)

Jump after keystroke to label:
/break(,) - example: /break(w, markb) when pressing key w the simulation will continue at markb

Wait between two values:
/wait(,) - example: /wait(15,20) - the next code in the procedure will be executed between 15 and 20 seconds. Until this the simulation will continue unchanged.

Short-form: /wait() - example: /wait(7)

Printing of text with HEX-colour in BGR-notation, in full screen only:
/print(,) - example: /print(abcd comes in green, 00FF00)

Start a real random process (result is a onetime piece of art)
/randomize()

Special functions:

Reducing the range of the art production area from left:
left

Reducing the range of the art production area from right:
right - example: right left right left right right

Expansion of the drawing area to full:
Y

It may be helpful to have a look at the historical document and the mondrian.ini file.

The content of vernissage.txt is used by MONDRIAN 21 by selecting the pull-down menu or via Alt-C. Please ensure that the manual mode "2" is selected.

Notes on the function "music / sound":

After the development of MONRIAN 21, Prof. Franke asked us, to integrate the historic function "music". Unfortunately the old coding charts had been lost and we were unable to reproduce them by running and listening to the old program. In the original version of MONDRIAN the sound output was unsatisfactory to H.W. Franke. Therefore MONDRIAN 21 comes with no sound; but it is possible to add sound using additional programms like goldwave. The sound file in wav- or mp3-format could be executed in time with the vernissage.

3. External control via the MONDRIAN-piano
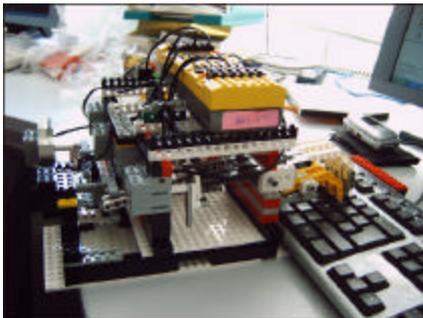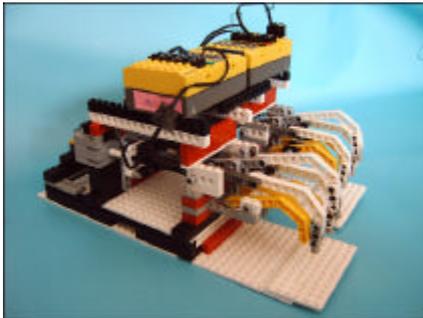
MONDRIAN 21- piano

To keep on track with the idea of an ad-hoc performance and to go along with the wish of H.W. Franke to combine MONDRIAN with sound, the project MONDRIAN-piano was intitiated in cooperation with VISIT, a non-profit education trust. The MONDRIAN-piano consists of 12 fingers, built up from widely available components of the LEGO robotics invention system (mindstorm), controlled by 6 motors and 2 LEGO RCX-computers, which communicate via infrared. MONDRIAN-piano supports colours 8, 9, 0, I, O, P and the keys W, E, R, S, D. So 6 keys for colour change and 6 keys for interrupt and control of the simulation (/break). The MONDRIAN-piano is linked in its constructive design to two hands and is didactial in the field of robotics. The MONDRIAN-piano is not only suited for art education, it fits to information technology and mechanics (craftswork, building). It generates a high value of knowlege between "art and technology" and it is fun from the beginning.

With a combination of vernissage.txt and the mondrian-piano it is possible to produce an "event" with multi-colour visualisation and to play tones via the programming language NQC of the LEGO RCX.

A guide book make it easy to construct the MONDRIAN 21-piano. There are videos and programms availiable for download.